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INFORMATION REPORT INFORMATION REPORT

CENTRAL INTELLIGENCE AGENCY

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C-O-N-F-I-D-E-N-T-I-A-L

50X1-HUM

COUNTRY USSR (Moscow Oblast)

REPORT

SUBJECT Serp i Molot Steel Plant, Moscow ()

DATE DISTR. 19 October 1960

NO. PAGES 2

REFERENCES

50X1-HUM

DATE OF INFO.

PLACE & DATE ACQ.

SOURCE EVALUATIONS A

APPRAISAL OF CONTENT IS TENTATIVE.

three reports on the Serp i Molot Steel Plant in Moscow:

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Attachment 1 is a five-page report covering the plant location, administrative

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STATE	X	ARMY	X	NAVY	X	AIR	15	NSA	X	FBI		OCR	X	NIC	X
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(Note: Washington distribution indicated by "X"; Field distribution by "#".)

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-2-

personnel, labor force, products and annual production figures.

there were no restricted shops in the plant.

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Attachment 2 is a five-page report covering generally the types and chemical composition of the steel produced and the products of the plant. The only elements used at the foundry

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were: carbon, manganese, sulphur, phosphorus, silicon, and at times aluminum in small quantities and rarely. The types of steel smelted at the foundry were low carbon, high carbon, and avtomatnaya steels. The latter was a stainless steel which could be of low or high grade.

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Attachment 3 is a six-page report on the plant covering the types of steel produced, the raw materials used, and annual production figures.

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The numbering of the steel corresponded to the content of composite metals, ie. S-25 had 0.25 percent carbon, S-30 had 0.30 percent carbon, and S-45 had 0.45 percent carbon.

"U" stood for uglerod (carbon) and that "10" indicated some metal component percentage.

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Ordinary steel of the S-25, S-30, S-40, S-45, and S-50 types was composed of: 20 kgs of aluminum for a 76-ton smelting, 0.25 percent to 1.10 percent carbon, 0.10 percent manganese, 0.10 percent phosphorus, 0.10 percent sulphur, and the remainder iron, iron ore or scrap. Phosphorus and sulphur were kept to the smallest possible amounts.

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COUNTRY USSR (Moskovskaya oblast)

REPORT

SUBJECT Serp I Molot Metallurgical Plant
 in Moscow

DATE DISTR. 22 September 1960

NO. PAGES

REFERENCES RD

DATE OF INFO.

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PLACE &
DATE ACQ.

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STATE		ARMY		NAVY		AIR		FBI		AEC					
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-2-

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SERP I MOLOT METALLURGICAL PLANT IN MOSCOW

1. The Serp 1 Molot Metallurgical Plant, had no other designation, nor known numerical designation, was located on shosse Entuziastov, Pervomayskiy rayon, Moscow, and was subordinate to the Ministry of Metallurgy. [redacted] the mail and cable address of the plant were Zavod Serp 1 Molot, Moskva. The plant telephone number was Zh-20080. 50X1-HUM 50X1-HUM
2. The plant director during the period 1946-1956 was ILIN (fmu), [redacted]
The deputy director was INOSENTSEV /INOKENTYEV?/
[redacted]
[redacted] The chief of the rolling mill was YERMOLAYEV (fmu)
[redacted]
[redacted] The chief of the electrical maintenance shop was MALANOV (fmu) [redacted] 50X1-HUM
3. [redacted] the plant had a total of about 10,000 employees, who worked three eight-hour shifts seven days a week. Production was curtailed only on the six legal holidays annually, but on these holidays duty crews kept the furnaces going, and maintenance crews repaired machinery. There were no large fluctuations in the number of workers during the period 1946-1956. The plant had an 18 month apprentice course for 100-120 apprentices, who upon graduation were, in the majority, employed by the Serp 1 Molot plant to take the place of employees lost in normal attrition.
4. The administrative-technical staff, bookkeepers, and the laboratory personnel worked one shift only. A few shops, such as the mechanical shop, consumer goods shop, railroad maintenance and repair shop, electrical-maintenance shop, truck drivers also worked one shift only, with duty crews on the other shifts, but at times they were required to work two shifts. All other shops listed below worked three shifts. In 1956 it was rumored that a change over to a six-hour four shift system would be effected in the near future.
5. The plant personnel were assigned as follows (approximately):
Administrative-technical-engineering staff 500
(including laboratory and bookkeeping offices)

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-3-

Open hearth shop	700
Profile iron foundry	1,500
Rolling mill shop	2,000
Laminating shop	4,000
Steel wire shop	700
Cable shop	150
Cold rolling mill	150
Mechanical shop	150
Consumers goods (toys)	50
Boiler rooms, heat supply	50
Electrical maintenance	25
Stamping shop	70
Model-making shop	50
Railroad maintenance shop?	100
Drivers	200

6. [redacted] there were no restricted shops in the plant.

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7. In 1952 an open hearth furnace was completely rebuilt. In 1953 automatic scissors were added to a rolling mill in the rolling shop. In 1949 a new shop, a cold rolling mill, was constructed in the Plant. This was a one-story reinforced concrete building, about 100m x 7 m, where [redacted] stainless steel was rolled into sheets. [redacted]

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8. The open hearth shop had four furnaces, capacity or output unknown. Here iron was smelted with steel, and various unspecified alloys were manufactured.

9. The profile foundry had eight electric ovens, and produced shaped parts (wheels, rollers, shafts, etc.) for the Serp i Molot Plant and also special orders for other plants, about which source had no information.

10. The rolling mill shop had five furnaces, which were kept at a temperature of 1800° and also had four rolling mills, one 750 mm, one 450 mm, one 350 and one 250 mm. It had 24 overhead traverse cranes each at 15 ton capacity.

11. The laminating shop had four furnaces and four rolling mills, [redacted] while the stamping shop had 10 presses.

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12. The final products of the plant were: Steel in ingots of 50 kilos, blocks of 50 kilos and sheets 1-1/2 - 2 m x 1/2 m 1 mm - 50 mm thick weight 50 kgs; iron in ingots, blocks and sheets - weight about 50 kgs; copper wire cable with a steel core six to eight mm in diameter for overhead use of trolleybusses; six ply with eight to ten strands per ply wire, with a diameter of 5mm to 20 mm in rolls of 50 meters (weight 50 kgs); unknown amounts of T shaped girders of varying lengths and thickness; angle iron of various sizes.

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-4-

13. Other plant products included round steel balls, about 50 mm in diameter, which were made in the stamping shop, and were, according to hearsay, special orders for ball bearing shops; hexagonal wire 125 mm in diameter, three meters in length of steel or steel alloys; nuts, bolts, axis shafts, wheels etc. Toys were made in the consumer shops from scraps and waste.

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14. Finished cable, girders, angle iron and sheets were shipped by trucks and by rail, without being packed in crates or boxes and without any factory markings. Ingots and blocks went out by rail only. All outgoing shipments had some sort of documentation, containing "Serp i Molot", weight, type, serial number of the item and probable destination. Source knew no other details.

15. [redacted] besides cable for trolleybusses, and balls for ball bearing plants, most of the finished production went to Zavod imeni Stalina, Plant 30, and Plant 45 in Moscow, and Plant 456 in Khimki. [redacted] Serp i Molot supplied only plants in Moscow and in a 100 - 200 km radius around Moscow, and [redacted] plants in the Urals or Siberia received steel, iron, etc. from metallurgical plants in their own region. [redacted] give further details on the products that went to Plant 456, when shipments began, what they were, or how often shipments were made.

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16. The plant received some sort of award in 1950 for prolonged meritorious service (vyslug let). The norm set by the director was quite high, and workers had to hustle to fill it. As a whole, during the period 1946 to 1956, the factory accomplished 102-103% of its norm. Waste was about one percent and usually occurred in the open hearth furnaces, and consisted of having sand in the metal. If the sand could not be removed with air hoses, then the faulty parts were melted and recast.

17. During the period 1946 to 1951 the plant received about twice monthly two to three truckloads of shell casings, rifle barrels and gun barrels as scrap. Other raw materials (frequency of shipment and/or quantities unknown) were: mazut for the furnaces - believed to come from Baku, pig iron, sand, lumber, scrap, copper, tin, brass, aluminum, and various unidentified non-ferrous metals which went to the open hearth furnaces. The plant also received stainless steel from an unknown plant, [redacted] in Dnepropetrovsk. This was used for special orders, requiring more careful rolling, and those working with it were paid better than those involved in other rolling operations.

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18. Every eight hours the open hearth furnaces in the rolling mill produced square shaped ingots, 1 meter in length, about 250 mm thick at the top, 400 mm at the bottom, each weighing 750 kgs. (1,200 ingots x 750 kgs. or 900 tons per 24 hours). The plant worked 360 days per year, making a total output of 324,000 tons annually (this was the only production figure known to source). These ingots were rolled in the rolling mills, where some were cut into

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-5-

square blocks about 1- $\frac{1}{2}$ m long, 100 - 150 mm thick, weight unknown. Some were cut into square blocks 2 m long, 50 mm thick, 50 mm wide, while some ingots were used for the manufacture of cable from 5 mm to 20 mm in diameter. Many blocks were sent to the laminating mill for further processing

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19.

no visitors other than university or technical-trade school groups, who were shown around various shops.

20.

no new shelters were constructed in Moscow after 1945.

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CONFIDENTIAL *aw***STEEL PRODUCTION IN THE SERP I MOLOT PLANT IN MOSCOW****Production figures**

2. [redacted] four open hearth furnaces (Martenovskaya Pech). Each of these furnaces turned out in a 24 hour day 3 - 4 smeltings (Plav-Ka - casting) of liquid steel. Each smelting was 76 ton. It took 6 - 8 hours for one smelting.

The shop worked seven days weekly, about 360 days in a year, producing 90,000
to 100,000 tons of steel annually, [redacted] ILLEGIB

[redacted] produced following steel types: S-25, S-30, S-40, S-45, S-50 50X1-HUM

U-10, 40 CH, 65-G and other types [redacted] 50X1-HUM

[redacted] S-30, S-40, S-45 + S-50)
Ordinary steel (S-25) was composed of

20 kilos of Aluminum for a 76 ton smelting

0.25% to 1.10% Carbon (Uglerod)

0.30% Manganese (Manganets)

0.10% Phosphorus (Fosfor)

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0.10% Sulphur (Sera)

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-2-

was
The rest all iron or iron ore or scrap. The phosphorus and sulphur were 50X1-HUM
kept to the smallest possible amount.

The numbering of the steel corresponded to the content of composite metals,
for instance (cyrillic letter C) S-25 had 0.25% carbon. S stood for steel. 50X1-HUM
S-30 had 0.30% carbon, S-45 had 45% carbon.

U stood for UGLEROD (carbon) and 50X1-HUM
10 indicated some metal component percentage. 50X1-HUM

Some alloys had a certain percentage of chrome, and
nickel chrome and iron chrome (percent unknown). Such steel was designated
Kh (cyrillic letter X) for khrom - 40Ch had probably 50X1-HUM
0.40% chrome. 65G steel was composed of: (for a 76 ton smelting) 600 kilos
manganese; 300 kilos silicate (silitsid); 20 kilos aluminum; the rest was steel/
or scrap
iron. The letter G stood for a high manganese alloy. There were also other

alloys produced the component parts were handled by 50X1-HUM
specialists

The alloys were chrome-silicon alloys (kremniy); special alloys
containing a high percentage of sulphur and phosphorus, called Avtomatnye 12;
Manganese-nickel-copper alloy (manganin); chrome-tungsten (volfram); molybdenum
alloys; brass and copper. all above smeltings were produced 50X1-HUM

1947-50.

30% of all smeltings
were ordinary steel S-25, S-30, S-40, S-45, S-50; 5% U-10; 5% 65G;

5% 40Ch; 5% special order alloys

Some of the frequency of smeltings of special order alloys were:
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-3-

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manganese-nickel-copper alloy (Manganin) one of two 76 ton smeltings per

month; molybdenum alloys -- some months none, some month one 76 ton smelting.

Some of the orders, which were posted on a bulletin board in the shop stated

"Aviation Steel". [redacted] the aviation steel was S-25,

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S-30, S-40 and S-50. [redacted]

New Foundry

3. [redacted] besides the open-hearth furnace shop the plant had an

electric furnace shop, constructed after 1945, [redacted]

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[redacted] This other shop was called the "new foundry" and had

an unknown number of electric furnaces (see [redacted]

[redacted] reproduction).

[redacted] the new shop produced various alloys

and a higher quality steel, and [redacted]

the new shop worked on stainless

steels and [redacted] it was possible that the new shop worked on titanium or vacuum

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melting. [redacted]

[redacted] The new foundry also made profile steel. [redacted]

[redacted] the electric ovens worked with

high voltage electrodes, without air intake. [redacted]

Raw Materials

4. [redacted] : pig iron, 50X1-HUM

iron ore, bauxite, magnesium (magnesit), dolomite (dolomit), aluminum, chrome, silic

cide, manganese, manganese-silicon alloy, molybdenum, nickel, chrome-nickel, tung-

sten, various alloys made in other unknown plants, copper, brass. [redacted]

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[redacted] at times, for special orders, various alloys were added to the steel

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-4-

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meltings. [redacted]

[redacted]

Final Production

5. [redacted] liquid steel, which was later formed into cylindrical

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ingots (narrower at the top and bottom) weighing about 800 kilograms each.

After the liquid steel was formed into ingots, OTK inspected and stamped

2-3

the ingots, About 205 ingots were returned each month as inferior work, and

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these ingots were recast. [redacted]

[redacted]

The final products of the [redacted]

plant were: steel sheets, $1\frac{1}{2}$ m x 1 m, 2-5 mm thick; round pieces of steel 10-15

mm in diameter believed to be for ball bearings.; railroad tracks; steel bars

of various sizes; wires and cables for ~~building~~ ^{of buildings,} construction, varying from 2 mm

to 5 mm; special parts for special orders (details unknown); consumer

items (pots, pans, knives, forks, unknown spoons). The steel sheets, bars,

cables, round parts, etc. were of all different steels mentioned above (S-25,

S-30, S-40, S-45, S050, 65 G, 40 Kh and alloys). The final production was

shipped out from the plant via railroad, without special boxing, to

unknown destinations. [redacted] the steel went to: 50X1-HUM

aviation factories, ball bearing factories, automobile factories, machinery,

tractor, excavator ^{plants} ~~factories~~ - Cities [redacted]

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Organization and Personalities

6. The plant director Enu ILIN, [redacted]

chief of Shop No. 1 (open-hearth furnaces) was Enu Zveridov [redacted]

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-5-
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The open hearth furnaces shop 50X1-HUM

had its own laboratory for testing the various steel types. Besides this individual shop laboratory, there was a central plant laboratory in the administration building. There were no secret or restricted shops in the plant. However, in the administration building was a ~~mx~~ so-called "secret section" (sekretnaya chast) where various blueprints, steel composition charts, bills of incoming and outgoing shipments were kept.

Miscellaneous

(. a. Rumor of moving factories. [redacted] in 1956 there were strong 50X1-HUM

rumors in Moscow that all harmful (noxious - vrednyy) factories would be evacuated from Moscow to outlying areas.

b. New Construction. [redacted] a new 14-story U-shaped apartment 50X1-HUM

building. The main wing was about 150 m x 20 m, the wings about 50 m x 20 m. 50X1-HUM

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AF FORM 112—PART II
APPROVED 1 JUNE 1948**CONFIDENTIAL**
(CLASSIFICATION)**AIR INTELLIGENCE INFORMATION REPORT**

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FROM (Agency)

REPORT NO.

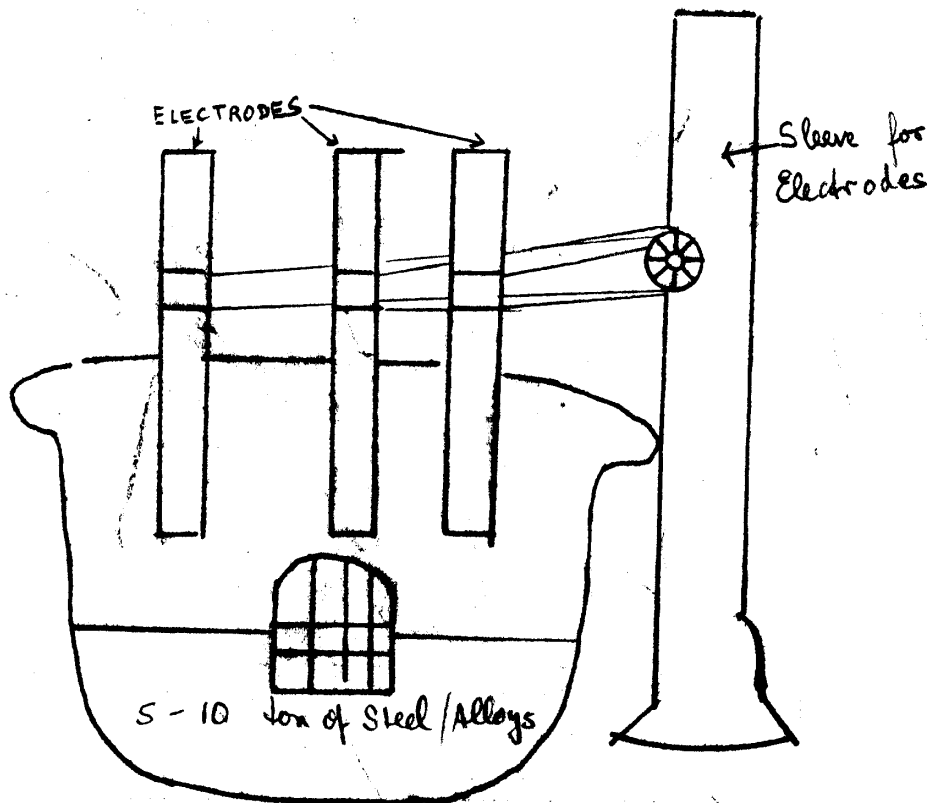
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reproduction of electric furnaces, where steel and alloys were smelted with electrodes working at high tension, without air.



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SUBJECT : Serp i Molot Metallurgical Plant in Moscow
Hammer and Sickle Plant

1. General

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[redacted]
[redacted] the [redacted] foundry [redacted] was equipped
with four Marten furnaces. [redacted]

[redacted] the location of the plant on shosse Entuziastov [redacted]

2. Steel Alloys

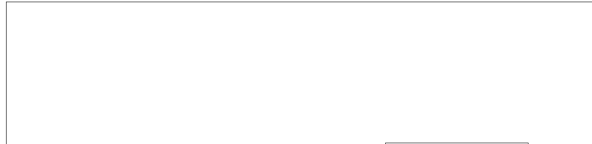
elements
The only ~~steel alloys~~ used at the foundry [redacted]

[redacted] were: Carbon, manganese, sulphur, phosphorus, silicon, and at
times, aluminum, the latter having been used in small quantities and rarely. 50X1-HUM

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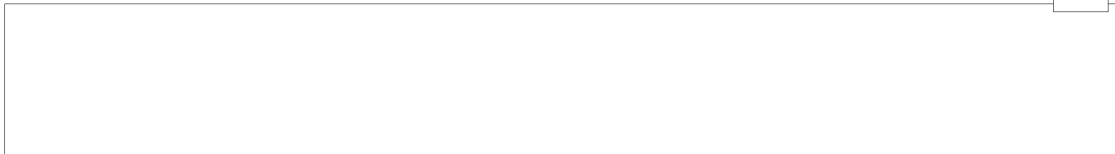
3. Types of Steel

The only types of steel smelted at the foundry were known [redacted] as, low and high carbon steels and [redacted] a type of steel smelted there as 50X1-HUM "Avtomatnaya". The latter [redacted] was a stainless steel which could be low or high grade steels. [redacted] The use for the avtomatnaya steel was also unknown [redacted] steel which might have been made at the plant [redacted]

Instrumentalnaya stal	instrumental
Konstruktsionaya	constructional
Elektrotekhnicheskaya	electrotechnical
Legirovanaya	alloy composed
Listovaya, (tolsto, tonko)	sheet steel (thick or thin)
Kisloutopornaya	acid resistant
Ogneupornaya	fire resistant
Rifelnaya	cutting steel, hard
Kalibrovannaya	calibrated

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[redacted] stainless steels, as: Chromium steel, nickel chromium, chromium titanium, chromium nickel silicon, chromium niobium, and/or chromium molybdeno- 50X1-HUM titanium compositions [redacted] Such steels, stainless and acid resistant, are being produced in Soviet steel mills as openly advertised. [redacted]



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The low carbon and "Avtomatnaya" steels contained the following compositions,

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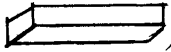

Low carbon	carbon	from 0.08 to 0.12 or higher
	manganese	0.30 to 0.40 "
	silicon	0.10 to 0.15 "
	sulphur	0.08 to 0.15 keeping to a minimum
	phosphorus	0.01 to 0.05 as low as possible

^{steel}
High carbon, similar compositions with a higher percentage of carbon, ^{0.50}, ^{0.60},
or ^{0.70} 70 %.

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Daily work assignments were posted on a board near
each furnace

5. Products and Production Figures

Only two types of ingots were made at the foundry. One was called the 0.08%
low carbon steel and had a square form , and was also known as
"Kipyashchaya stal" - hot rolled steel; the second had a form ,
and had the properties of ^{0.10} 10-15% or more carbon and was also called "Spokoynaya
stal" - dead melt for ~~hot~~ cold rolling.

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The foundry had four
furnaces, each having a capacity of 70 tons
Both types of ingots had a weight of 700 kg each.

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on the average one working shift, 8
hours per day, could produce 100 ingots from one furnace. 4 furnaces X 100 ingots
per furnace X three shifts per day = 1200 ingots daily.

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about the firing or burning, or melting cycles of the furnaces.

it took 6 to 8 hours to complete the melting of one charge, but it could have
taken less time. After completion of the process the ingots would be cleaned
and forwarded to the OTK inspector who would apply to the ingot a mark with

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red paint.

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ingots were then forwarded to the rolling mill "Prokatnyy tsekh".

the steel of the foundry could be used for construction of machines, buildings, and implements to this end. some type of steel balls were made for flour mills, called "Shariki dlya melnits".

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stored near the rolling mill rolls of steel wire

There were no castings made at the foundry and no other casting equipment available than the molds for the ingots.

6. Miscellaneous

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the plant did not have any secret departments, research laboratories, or shops.

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There was at the plant a central laboratory engaged in analyses of various metals and alloys

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There was only one smelting shop at the plant containing four blast furnaces.

7. Civilian Defense

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There were at the plant periodic lectures on civil defense conducted by the DOSAAF,

No civil defense measures were introduced or lectured to the residents of

Gospitalnaya ulitsa, in the Baumanskiy rayon of Moscow.

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[redacted] the Hammer and Sickle plant [redacted]

was

dedicated to the production of various types of steels.

They produced steels consisting of a 70 metric ton melt which consisted of pig iron, scrap and minerals which contained 0.08 carbon, 0.30 manganese, 0.30 phosphorus and sulphur from 0.30 to 0.40.

Special steels which consisted of 70 metric ton melts of pig, scrap, approx. 400 kilograms of silicon, 0.50 carbon, 0.35 manganese, ~~silphur~~ sulphur from 0.15 to 0.2 of phosphorus, 0.025 of silicon and 0.025 of sulphur.

add [These steels were produced in diesel ^{oil} fuel fired furnaces ~~xxxxxxxxxxxx~~ which operated at a temperature of from 1550 to 1700 degrees however the temperature ~~might~~ might exceed this as the refractory brick would melt.

Under normal conditions there were three melts per furnace, ^{one melt per 24 hrs.} ~~per~~ eight hours ~~per~~, and since there were four of these ~~xxxx~~ oil fired furnaces one could compute that the daily production of 840 tons. Just about the total production of these furnaces was sent to the rolling mills.

add [They also produced steel wire of the thickness of a finger (index) in great quantities as well as in smaller sizes. [redacted]

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[redacted] the workers referred to the steels as 0.08, ~~0.08~~ 0.10, 0.12, 0.15, 0.25, 0.45, 0.50, 0.55 and 0.60. In some of these instances [redacted]

[redacted] the letter A was sometimes prefixed to the above indicated figures.

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Among the raw materials which the plant received were the following:

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~~Pigx Scrap~~ , mineral, ingots, silicon, aluminium, manganese, phosphorus, sulphur, diesel ^{oil} ~~fuel~~ for the furnaces, lubricants for the machinery and lumber.

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